

LISTING OF CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application:

1. (Currently Amended) A hunting detecting device for an electrical load controlling device, wherein the electrical load controlling device is configured to set ~~sets~~ a current command value for an electrical load, wherein, based on a deviation between a current that actually flows through the electrical load and the current command value, the electrical load controlling device further performs at least proportional control in a group including proportional control, integral control, and differential control, wherein the electrical load controlling device is further configured to send ~~sends~~ a current generated based on the ~~performed~~ control being performed to the electrical load, the hunting detecting device comprising:

a current determining device~~[[,]]~~ ~~which determines~~ configured to determine whether there is a current through the electrical load; and

a hunting detector~~[[,]]~~ configured to count each time ~~wherein[[,]]~~ when the current ~~determining device determines that there is a current~~ through the electrical load~~[[,]]~~ determined to be present by the current determining device drops below a predetermined low level ~~hunting detector detects that the number of times of hunting occurs~~ within a predetermined period of time as a hunting condition.

2. (Currently Amended) The hunting detecting device according to claim 1, wherein the hunting detector includes:

a duty ratio determining device configured to determine ~~for determining~~ whether a duty ratio related to the current through the load is less than a predetermined threshold value

so as to determine that the current through the electrical load determined to be present by the current determining device has dropped below the predetermined level close to zero and
a counter device[,] ~~which accumulates~~ configured to count the number of times the duty ratio determining device determines that the duty ratio is less than the predetermined threshold value within the predetermined period of time so as to count the number of times that the hunting condition occurs.

3. (Currently Amended) The hunting detecting device according to claim 2, further comprising an abnormality determining device, wherein, when the cumulative number ~~accumulated~~ counted by the counter device ~~is at least~~ has reached an abnormality determination value, the abnormality determining device ~~determines~~ is configured to determine that there is an abnormality.

4. (Currently Amended) A short circuit detecting device for an electrical load controlling device, having the hunting detecting device according to claim 1, the short circuit detecting device further comprising:

a short circuit determining device, wherein, when the number of times ~~that the~~ of hunting condition occurs within a the predetermined period of time exceeds a predetermined number, the short circuit determining device ~~determines~~ is configured to determine that there is a short circuit in the electrical load.

5. (Currently Amended) A short circuit detecting device for an electrical load controlling device, having the hunting detecting device according to claim 2, the short circuit detecting device further comprising:

a short circuit determining device, wherein, when the number of times ~~accumulated~~ counted by the counter device ~~is at least~~ has reached a predetermined number, the short circuit determining device ~~determines~~ is configured to determine that there is a short circuit in the electrical load.

6. (Currently Amended) The short circuit detecting device according to claim 4[[:]], wherein the short circuit detecting device further includes,

an electrical power source,

a relay device, and

a relay controlling device, wherein

the electrical load is connected to the electrical power source with the relay device, and wherein,

when the short circuit determining device determines that there is a short circuit in the electrical load, the relay controlling device ~~turns~~ is configured to turn off the relay device.

7. (Currently Amended) The short circuit detecting device for an electrical load controlling device according to claim 4, further comprising a warning device, wherein, when the short circuit determining device determines that there is a short circuit in the electrical load, the warning device ~~warns~~ is configured to warn of existence of the short circuit.

8. (Currently Amended) A driving force distribution controlling device having the short circuit detecting device according to claim 4, wherein the driving force distribution controlling device ~~controls~~ is configured to control a driving force distributing device ~~that~~ adjusts is configured to adjust a ratio of driving force that is distributed from a power source of a vehicle to front wheels and rear wheels of the vehicle via a driving force transmitting

system, wherein the driving force distributing device includes ~~an~~ the electrical load ~~for~~ adjusting configured to adjust the ratio of the driving force; and wherein the driving force distribution controlling device functions as the electrical load controlling device.

9. (Currently Amended) A hunting detecting method for controlling a current through an electrical load, comprising steps of:

setting a current command value for the current through the electrical load;
sending a current to the electrical load;
detecting the current actually flowing through the electrical load; and
performing control of the current based on a deviation between the detected current and the current command value, wherein

the control is selected from a group including proportional control, the combination of proportional control and integral control, the combination of proportional control and differential control, and the combination of proportional control integral control, and differential control, the method further comprising steps of[[:]],

~~a step for determining whether there is a current through the electrical load;~~
and

~~a step for detecting the number of times~~ counting each time when the current through the electrical load determined to be present by the determining step drops below a predetermined low level within a predetermined period of time as a hunting condition occurs within a predetermined period when it is determined that there is a current through the electrical load.

10. (Currently Amended) The hunting detecting method according to claim 9, wherein the counting ~~step for detecting the number of times hunting occurs~~ includes[[:]],

a ~~determining step for determining~~ whether a duty ratio related to the current through the electrical load is less than a predetermined threshold value as said predetermined low level; and

a counting ~~step for accumulating~~ the number of times that the duty ratio determining step determines that the duty ratio is less than the threshold value within the predetermined period of time as said counting each time when the current through the electrical load determined to be present by the determining step drops below a predetermined low level within a predetermined period of time.

11. (Currently Amended) The hunting detecting method according to claim 9, further comprising:

determining that there is a short circuit in the electrical load ~~determining step,~~
~~wherein~~[[,]] when the number of times that the hunting condition occurs exceeds a
predetermined number[[,]] ~~it is determined that there is a short circuit in the electrical load.~~

12. (Currently Amended) The hunting detecting method according to claim 10, further comprising:

determining that there is a short circuit in the electrical load ~~determining step,~~
~~wherein~~[[,]] when the ~~cumulative number in the counting step~~ of times it is counted that the
duty ratio determining step determines that the duty ratio is less than the threshold value
within the predetermined period of time exceeds a predetermined number[[,]] ~~it is determined~~
~~that there is a short circuit in the electrical load.~~

13. (Original) A driving force distribution controlling device for a four wheel drive vehicle, wherein the driving force distribution controlling device controls an inductive load

circuit that adjusts a ratio of driving force that is distributed from a power source to a plurality of wheels via a driving force transmitting system, the driving force distribution controlling device comprising: a detecting device for detecting a current through the inductive load circuit; a first timer device for measuring a period required for a counter electromotive current, which is generated in the inductive load circuit after the vehicle is stopped, to vanish; a test current outputting device, wherein after the first timer device completes measuring, the test current outputting device outputs a test current to the inductive load circuit; a counting device, wherein, while the test current is being outputted, the counting device counts the number of times the current detected by the detecting device exceeds a first threshold value; and a short circuit determining device, wherein, when the number of times the detected current exceeds the first threshold value is at least a predetermined second threshold value, the short circuit determining device determines that there is a short circuit in the inductive load circuit.

14. (Original) The driving force distribution controlling device for a four wheel drive vehicle according to claim 13, further comprising a second timer device for measuring a period during which the test current is outputted, and wherein, when the period measured by the second timer device reaches a predetermined period, the test current outputting device stops outputting the test current.

15. (Original) The driving force distribution controlling device for a four wheel drive vehicle according to claim 13, wherein, based on the determination result of the short circuit determining device, the amount of current supplied to the inductive load circuit is set in accordance with a two wheel drive mode.

16. (Original) The driving force distribution controlling device for a four wheel drive vehicle according to claim 13, further comprising: a vehicle stop determining device for determining whether the vehicle is in a stopped state based on a control parameter; wherein the first timer device starts operation based on the determination result of the vehicle stop determining device.

17. (Original) The driving force distribution controlling device for a four wheel drive vehicle according to claim 16, wherein the control parameter is a wheel speed parameter and a throttle opening degree parameter.

18. (Original) The driving force distribution controlling device for a four wheel drive vehicle according to claim 16, wherein the inductive load circuit is driven based on a command current; and wherein the control parameter is the command current and a wheel speed parameter.

19. (Original) The driving force distribution controlling device for a four wheel drive vehicle according to claim 13, wherein the driving force transmitting system includes an electromagnetic clutch mechanism.

20. (Original) The driving force distribution controlling device for a four wheel drive vehicle according to claim 19, wherein the driving force transmitting device includes an electromagnetic solenoid for controlling the electromagnetic clutch mechanism, and wherein the electromagnetic solenoid forms the inductive load circuit.

21. (Original) The driving force distribution controlling device for a four wheel drive vehicle according to claim 19, wherein a shunt resistor is connected between the electromagnetic solenoid and the detecting device, and wherein the detecting device detects a current through the electromagnetic solenoid by detecting a current through the shunt resistor.